

REMARKS

Applicant respectfully requests entry of the amendments and consideration and allowance of all of the pending claims in view of the following.

Rejection of claims 7-38 as obvious over Matthews et al in view of European Patent Application 0 434 464 and Karn

The examiner rejected claims 7-38 as obvious over Matthews et al. in view of EPA 0 434 464 and Karn. The examiner contends that Matthews teaches a lubricating oil composition which may be used as a hydraulic fluid comprising zinc dialkyl dithiophosphate. The examiner admits that Matthews does not teach the addition of magnesium salicylate. However, the examiner contends that Karn teaches overbased magnesium alkylsalicylates as additives for hydraulic fluids.

Response

Claims 7, 9, 11, 17, and 20 have been canceled, and new claims 39-46 have been added. The examiner has not established that the claims are obvious for the following reasons.

The Use of the Claimed Combination is a Result Effective Variable

The examiner has not pointed to a teaching or suggestion in any of the cited references that the use of magnesium alkylsalicylate salts in combination with ZnDTP in a hydraulic fluid is a result effective variable.

The discovery of an optimum value of a variable in a known process normally is an obvious variation. However, the CCPA recognizes that there are exceptions to this rule. One exception is where "the parameter optimized was not recognized to be a result-effective variable." *In re Antonie*, 559 F.2d 618, 620, 195 U.S.P.Q. 6, 8 (C.C.P.A. 1977). In *Antonie*, the PTO argued that "it would always be obvious for one of ordinary skill in the art to try varying every parameter of a system in order to optimize the effectiveness of the system even if there is no evidence in the record that the prior art recognized [that] particular parameter affected the result." *Id.* The court disagreed, explaining that "[d]isregard for the unobviousness of the results of 'obvious to try' experiments disregards the 'invention as a whole' concept of § 103." *Id.*

Table 1 on page 12 of the application illustrates the result effective nature of choosing magnesium salicylate over calcium salicylate in a 250 hour test. The total

weight loss using magnesium salicylate was over six times less than the total weight loss using calcium salicylate in the same formulation.

Additional testing was performed using the test procedures in the Examples of the pending application:

COMPOSITION 1, a combination of ZnDTP and magnesium salicylate;
COMPOSITION 2, a combination of ZnDTP and calcium salicylate;
COMPOSITION 3, to compare the effect of magnesium salicylate alone; and,
COMPOSITION 4, to compare effect of ZnDTP alone.

The compositions tested and the results are given in Exhibit C to the Declaration of Richard Dixon ("Dixon Decl."), ¶14. Compositions 1 and 2 were originally submitted as comparative testing in the pending application. The testing of Compositions 3 and 4 were provided as additional testing where the total treat rate of the listed additives remained constant (0.53%) of which the antirust component remained constant at 0.10%. Dixon Decl., ¶15. The results obtained using Composition 3 illustrate the effect of a relatively high concentration of magnesium salicylate, alone, on wear testing under the conditions used in the Examples. Composition 3 produced total wear of 1.9 mg, indicating that the use of magnesium salicylate (alone) in the hydraulic fluid had a significant influence on low-load performance. Dixon Decl., ¶ 16. The results obtained using Composition 4 illustrate the effect of a relatively high concentration of ZnDTP, alone, in the wear testing under the conditions used in the Examples. Composition 4 produced total wear of 8.6 mg, indicating that the use of ZnDTP (alone) in the hydraulic fluid also lowered total wear. Dixon Declaration ¶ 18. However, as seen from the following discussion, additional testing demonstrated that total wear using commercial products comprising ZnDTP (alone) increased over time, as compared to the Test Sample which comprised a combination of ZnDTP and magnesium salicylate. Dixon Decl., ¶19.

As explained by Dr. Dixon, Shell conducts an annual or bi-annual investigation of fluids available in local and global markets. Samples of fluids are obtained from the market and tested in a range of common tests, normally including elemental and infrared analysis to determine the fluid composition. The tests are performed at Shell laboratories in Cheshire (United Kingdom) and Atsugi (Japan). Dixon Decl. ¶ 6. During the course of a Shell annual or biannual investigation, extended wear testing was conducted in order to understand the long-term performance of hydraulic fluids. The tests were performed over

a duration of 1000 hours instead of 250 hours according to the procedures set forth in IP 281/80, "Determination of anti-wear properties of hydraulic fluids - Vane pump method," (Exhibit A). ¶ 7. Dr. Dixon supervised the testing referred to in the foregoing paragraph at the Shell laboratory in Cheshire. Dr. Dixon also testifies that he was in frequent communication and made physical visits to the laboratory in Atsugi (Japan). Dr. Dixon testifies that was satisfied that the extended wear testing adhered to high scientific standards. Dixon Decl. ¶ 8.

During the extended wear testing, the "Test Sample" had the following composition:

0.012 %wt magnesium salicylate having a total base number of 345 and a magnesium content of 550% of the stoichiometrically equivalent amount of magnesium based on the amount of total acid, containing 40 wt.% mineral oil;
0.25 wt.% zinc dithiophosphate ("ZnDTP"); and,
99.05 wt.% lubricant API Group I base oil having a kinematic viscosity in the range of 32 cSt (at 40 °C) (ISO viscosity grade 32). Dixon Decl. ¶ 9.

The "Test Sample" was compared to competitive products comprising no identifiable metal salicylates by the analysis performed and varying amounts of zinc (as ZnDTP). Dixon Decl. ¶ 10. The results of the tests are shown in the Chart entitled Extended Anti-Wear Test, attached as Exhibit B. The amount of zinc in the competitive products is indicated in the legend. Dixon Decl. ¶ 11. As seen from Exhibit B, only the Test Sample (comprising ZnDTP and magnesium salicylate) exhibited consistent low total wear of below 50 mg over the entire test period of 1000 hours. Dixon Decl. ¶ 12. In contrast, and even though ZnDTP performed well in the 250 hour test, total wear using commercial products comprising ZnDTP without magnesium salicylate increased over time to from about 80 to over 250 mg over the same 1000 hours. Dixon Decl. ¶ 13.

Matthews

The examiner admits that "Matthews et al. differ from the instant claims in not teaching the addition of magnesium salicylate." In other words, the examiner admits that Matthews describes a hydraulic fluid comprising ZnDTP but not magnesium salicylate.

Matthews therefore is similar to the competitive products tested in the extended wear testing of ¶ 6-13 in the Dixon Declaration. Although ZnDTP, alone, performed well in the 250 hour test, the extended wear testing demonstrates that total wear using commercial products comprising ZnDTP without magnesium salicylate increased over time to from about 80 to over 250 mg over the same 1000 hours. Dixon Decl. ¶ 13. Only the Test Sample (comprising ZnDTP and magnesium salicylate) exhibited consistent low total wear of below 50 mg over the entire test period of 1000 hours. Dixon Decl. ¶ 12, Exhibit B. In addition, as seen from Table 1 on page 12 of the application, the total weight loss in a 250 hour test using magnesium salicylate was over six times less than the total weight loss using calcium salicylate in the same formulation.

The foregoing demonstrates that the use of a combination of ZnDTP and magnesium salicylate in a hydraulic fluid is a result effective variable. The examiner has not pointed to any teaching or suggestion of the result effective nature of this variable.

Nor has the examiner pointed to anything in any cited reference that would motivate a person of ordinary skill in the art to modify Matthews in the manner required to produce this result effective combination. The examiner cannot establish *prima facie* obviousness by merely arguing that Matthews could be modified to use the magnesium salicylate salts described in Karn. In order to establish a case of *prima facie* obviousness, the examiner has the burden to point to a teaching or suggestion in the references themselves that it would be desirable to make such a modification. *In re Brouwer*, 37 U.S.P.Q.2d 1663, 1666 (Fed. Cir. 1995). The examiner has not pointed to a teaching of the necessary motivation--a failure which is particularly telling given the result effective nature of the modification.

EP 434 464

The examiner contends that EP 0 434 464 (EPA '464) teaches hydraulic fluids comprising amino succinate ester as corrosion inhibitor (abstract) and that it can be desirable in an acidic environment to incorporate overbased alkylsalicylate, citing page 3, ll. 49-52.

In fact, EPA '464 is directed to "METAL FREE LUBRICANTS." Title. Specifically, EPA '464 is directed to "a lubricant composition compris[ing] (a) a metal-

free antiwear or load carrying additive containing sulphur and/or phosphorus, and (b) a corrosion inhibitor in the form of an amino succinate ester (formula omitted)." EPA '464 specifically states that "[i]t is desirable to be able to provide hydraulic fluids which are zinc free." P. 2, ll. 8-9. The cited portion of EPA '464 merely states that "[w]hen it is to be used in an acidic environment, it can be desirable to incorporate in a lubricant composition of the present invention a third component, viz. (c) an alkaline earth metal alkylbenzene sulphonate, alkylnaphthalene sulphonate, alkylphenate, alkyl sulphurized phenate, or alkylsalicylate." (Emphasis added).

The examiner has not pointed to a teaching in EP '464 that would motivate a person of ordinary skill in the art to use **magnesium salicylate** in a hydraulic fluid comprising ZnDTP for any particular purpose. The examiner certainly has not pointed to a teaching in EPA '464 that the use of a combination of ZnDTP and magnesium salicylate in a hydraulic fluid would produce 50 mg or less total wear over extended testing of 1000 hours in comparison to competitive products comprising ZnDTP. Dixon Decl., ¶ 13.

Karn

The examiner relies on Karn as teaching overbased magnesium alkylsalicylates and allegedly as teaching these materials as additives for hydraulic fluids.

Karn generally is directed to "basic magnesium salts of substituted aromatic hydroxy carboxylic acids or the derivatives thereof and to a process for preparing such salts." Karn, abstract. According to Karn, "[t]hese salts can be used either alon[e] or in combination, as additives, in a variety of lubricating oils and fuels including gasoline, diesel fuels, etc." Karn, abstract.

The examiner points to the following portion of Karn as teaching the use of overbased magnesium alkylsalicylate salts in hydraulic fluids:

The carboxylic metal salts of this invention can be effectively employed in a variety of lubricating and fuel compositions. The lubricating compositions include primarily crankcase lubricating oils for spark-ignited and compression-ignited internal combustion engines including automobile and truck engines, two-cycle engine lubricants, aviation piston engines, marine and railroad diesel engines and the like. In addition, however, automotive transmissions, trans-axle lubricants, gear lubricants, metal-working lubricants, hydraulic fluids and various other lubricating oils and greases can be

improved by the incorporation therein of a small but effective amount of the carboxylic compositions of this invention.

Karn, col. 17, ll. 41-47 (emphasis added).

The examiner has not pointed to a teaching or suggestion in Karn that would motivate a person of ordinary skill in the art to modify Matthews ZnDTP containing fluid to use Karn's magnesium salicylate salts to produce a hydraulic fluid comprising a combination of ZnDTP and magnesium salicylate. In order to establish a case of *prima facie* obviousness, the examiner has the burden to point to a teaching or suggestion in the references themselves that it would be desirable to make such a modification. *In re Brouwer*, 37 U.S.P.Q.2d at 1666. The examiner has not pointed to a teaching of the necessary motivation--a failure which is particularly telling given the result effective nature of the modification. The examiner certainly has not pointed to a teaching or suggestion that the use of ZnDTP with magnesium salicylate in a hydraulic fluid would produce 50 mg or less total wear over extended testing of 1000 hours in comparison to competitive products comprising ZnDTP alone. Dixon Decl., ¶ 13.

Applicant respectfully requests that the rejection of the claims as obvious over Matthews, EPA '464 and Karn be withdrawn.

New claims

As seen from the foregoing, Applicant is entitled to allowance of claims that encompass the use of the combination of ZnDTP and magnesium salicylates at any concentration that is effective to produce an improvement in extended wear results. New claims 39-46 also have been added. New claims 39-46 are directed to specific concentrations of ZnDTP and magnesium salicylates. The concentrations given in new claims 40, 42, 44, and 46 are the concentrations used in Table 1 on page 12 of the specification, and in the additional data in Exhibit B. The concentrations given in new claims 39, 41, 43, and 45 are slightly broader ranges encompassing the concentrations given Table 1 on page 12 of the specification, and find support at page 7, ll. 7-19.

Rejection of Claims 7-38 over U.S. Patent No. 6,306,801 to Yagishita

The examiner rejected claims 7-12, 18, 20, and 22-33 as obvious over U.S. Patent No. 6,306,801 to Yagishita ("Yagishita"). According to the examiner, Yagishita discloses a lubricating oil composition which may be a "hydraulic actuation oil" and zinc

dithiophosphate is taught. The examiner contends that the method of claims 22-38 are taught when Yagishita's compositions are used in a hydraulic environment, and that the metallic detergent of Yagishita may be a calcium or magnesium salt.

Response

As shown above, the use of a hydraulic fluid comprising ZnDTP and magnesium salicylate is a result effective variable. The examiner has not pointed to a teaching or suggestion in Yagishita to make (a) a hydraulic fluid comprising (b) a combination of (i) ZnDTP with (ii) magnesium salicylate.

Yagishita describes a "lubricating oil composition having an excellent sludge formation inhibiting effect and being suitable for use as an engine oil." Abstract.

According to Yagishita,

[t]he lubricating oil composition . . . is preferably used especially as a gasoline engine oil. In addition, it is also preferably used as a lubricating oil which will suffer the troubles caused by sludge formation due to thermal/oxidative degradation, and the like of the lubricating oil. Specific examples of such a lubricating oil include diesel engine oils, two-cycle engine oils, automobile gear oils, ATF oils, non-stage transmission oils, shock absorber oils, and hydraulic actuation oils.

Yagishita, col. 2. ll. 3-12. To the extent that Yagishita expresses a preference for a type of lubricating oil, that preference is for "gasoline engine oil."

Yagishita states that, "[t]he component (C) in the lubricating oil composition of the present invention is a metallic detergent." Col. 9 ll. 7-8. Specific examples of the metal are said to include "alkali metals such as sodium and potassium, alkaline earth metals such as magnesium, calcium, [] barium, and zinc. Especially, alkaline earth metals are preferred." Yagishita, col. 9, ll. 28-31. The cited portion of Yagishita reads as follows: "More specific examples of the alkaline earth metal salicylate include alkaline earth metal salts of alkylsalicylic acid having at least one straight or branched alkyl group having 4 to 30, preferably 6 to 18 carbon atoms. Preferably calcium salts and/or magnesium salts, *more preferably calcium salts are used.*" Yagishita, col. 10, ll. 15-21 (emphasis added). Where Yagishita indicates a preference for the alkaline earth metal of the salicylate, *that preference is for calcium salicylate.* Yagishita, col. 10, ll. 15-21 (emphasis added).

The examiner has not pointed to any teaching or suggestion in Yagishita that would motivate a person of ordinary skill in the art to make the selections required to produce the claimed combination. Merely identifying individual components of a claimed invention in a single reference does not supply sufficient "evidence" to support a case of *prima facie* obviousness. *In re Kotzab*, 55 U.S.P.Q.2d 1313, 1317-18 (Fed. Cir. 2000). "[A] rejection cannot be predicated on the mere identification [in a single cited reference] of individual components of claimed limitations. Rather, particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed." *Id.* at 1317.

The examiner has not and cannot provide the required particular findings why a person of ordinary skill in the art would make a hydraulic fluid (rather than Yagishita's preferred "gasoline engine oil") and then use magnesium salicylate salts (rather than Yagishita's preferred calcium salicylate salts) in that hydraulic fluid, thereby producing the claimed combination.

The examiner has not pointed to any teaching or suggestion that such a selection would be a result effective variable. The examiner has not pointed to any teaching or suggestion that choosing magnesium salicylate over calcium salicylate could produce a total weight loss over 250 hours over six times less than the total weight loss using calcium salicylate in the same formulation. Nor has the examiner pointed to a teaching or suggestion that combining ZnDTP with magnesium salicylate in a hydraulic fluid would produce 50 mg or less total wear over extended testing of 1000 hours in comparison to competitive products comprising ZnDTP. Dixon Decl., ¶ 13.

Applicant respectfully requests that the rejection over Yagishita be withdrawn.

Yagishita in view of Matthews

The examiner rejected claims 13-17, 19, 21, and 34-38 as obvious over Yagishita in combination with Matthews, relying on Matthews as teaching aminosuccinic acid ester as an anti-rust agent in hydraulic fluid.

The combination of Yagishita with Matthews does not fill the gaps described above. The examiner has not pointed to a teaching or suggestion in either reference that

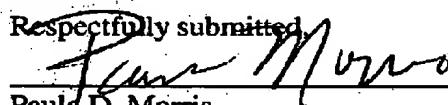
would motivate a person of ordinary skill in the art to modify either reference to produce a hydraulic fluid comprising a combination of ZnDTP and magnesium salicylate. Nor has the examiner pointed to a teaching or suggestion that using the claimed combination would be a result effective variable.

For the foregoing reasons, claims 13-17, 19, 21, and 34-38 depend from allowable base claims and are allowable therewith.

CONCLUSION

For all of the foregoing reasons, Applicant respectfully requests entry, consideration, and allowance of all of the pending claims. The Commissioner is hereby authorized to charge any fees associated with this paper to Deposit Account No. 19-1800 (File no. TS7564), maintained by Shell Oil Company

Respectfully submitted,



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